WAVEJOKER

Remote control system for water supply networks

Remote control system for water networks, such as tanks, pumps or distribution networks. The system allows autonomous and centralized operation modes based on WAVEJOKER units and other equipment (PLC's, specific measurement equipment, etc.).

Integrable into any remote control installation or SCADA system with Modbus protocol.

KEY CONCEPTS

Long range radio communication
Available in VHF and UHF bands, with license or free band. Modbus protocol (allows encryption).

Easy installation and configuration equipment
Configuration through the display of the unit itself. Includes test functions and quality measurements for radio links. Configuration and immediate start-up.

Autonomous and integrable
Autonomous operation and also integrable into any SCADA with Modbus support.

Low consumption
Battery-powered storage units with extremely low consumption, even with power from analog sensors, integrated display and long-range radio communications. Battery life of more than 3 years.

Specific
Without programming, it incorporates all the functions necessary to control the supply network (communications, pumps, tanks, network points, valves, etc.).

APPLICATIONS

- Water supply networks.
- Remote control of purification networks.
- Industrial remote control.
- Reservoirs.

- Autonomous control of pumping to tank.
- Remote control.
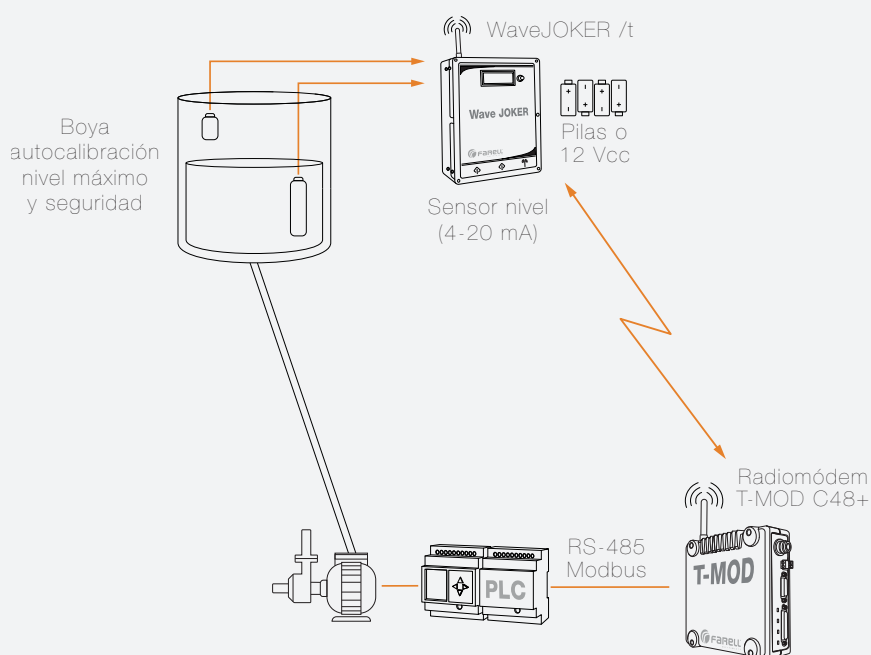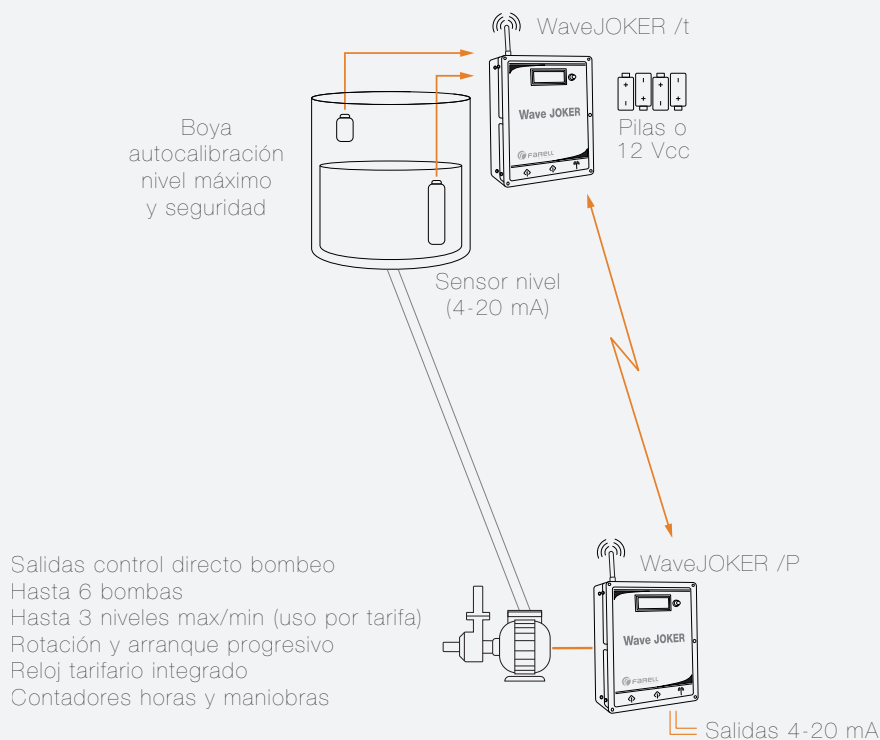- Integration of canalization to irrigation systems.

CHARACTERISTICS

- Pumping station unit with control up to 6 pumps (P unit).
- Pumping control for local and remote tank with energy savings, based on different tank filling levels according to current electricity rate.
- Pump rotation.
- Alternate pump if failure.
- Hour counter and maneuvers.

- Total water and flow meters.
- Multi-rate electric meters.
- Integrated multi-rate clock (summer/winter).
- Self-calibrated tank level measurements.
- Wall mounting box.
- Wide temperature range (-30 ºC to 65 ºC).
- Integrated native Modbus.

AUTONOMOUS OPERATION

In this mode, a WaveJOKER /t unit configured in Master Mode sends the status of the measured signals autonomously to slave WaveJOKER /p units or to other equipment that supports the Modbus RTU protocol (via T-MOD C48+ radio modem). The WaveJOKER /t unit allows configuration of the initial Modbus register where to write.

WaveJOKER /t

Boya
autocalibración
nivel máximo
y seguridad

Pilas o
12 Vcc

Sensor nivel
(4-20 mA)

Salidas control directo bombeo
Hasta 6 bombas
Hasta 3 niveles max/min (uso por tarifa)
Rotación y arranque progresivo
Reloj tarifario integrado
Contadores horas y maniobras

WaveJOKER /P

Salidas 4-20 mA

WaveJOKER /t

Boya
autocalibración
nivel máximo
y seguridad

Pilas o
12 Vcc

Sensor nivel
(4-20 mA)

Radiomódem
T-MOD C48+

RS-485
Modbus

PLC

T-MOD

The WaveJOKER /t unit transmits periodically and also if there are variations in the input signals. The protocol used is Modbus RTU. Master Mode allows the WaveJOKER /t unit to be powered by batteries, with an autonomy of more than 3 years.

WaveJOKER /t

Pilas o
12 Vcc

Boya
autocalibración
nivel máximo
y seguridad

Sensor nivel
(4-20 mA)

Pilas o
12 Vcc

WaveJOKER /t

Sensor nivel
(4-20 mA)

WaveJOKER /2p
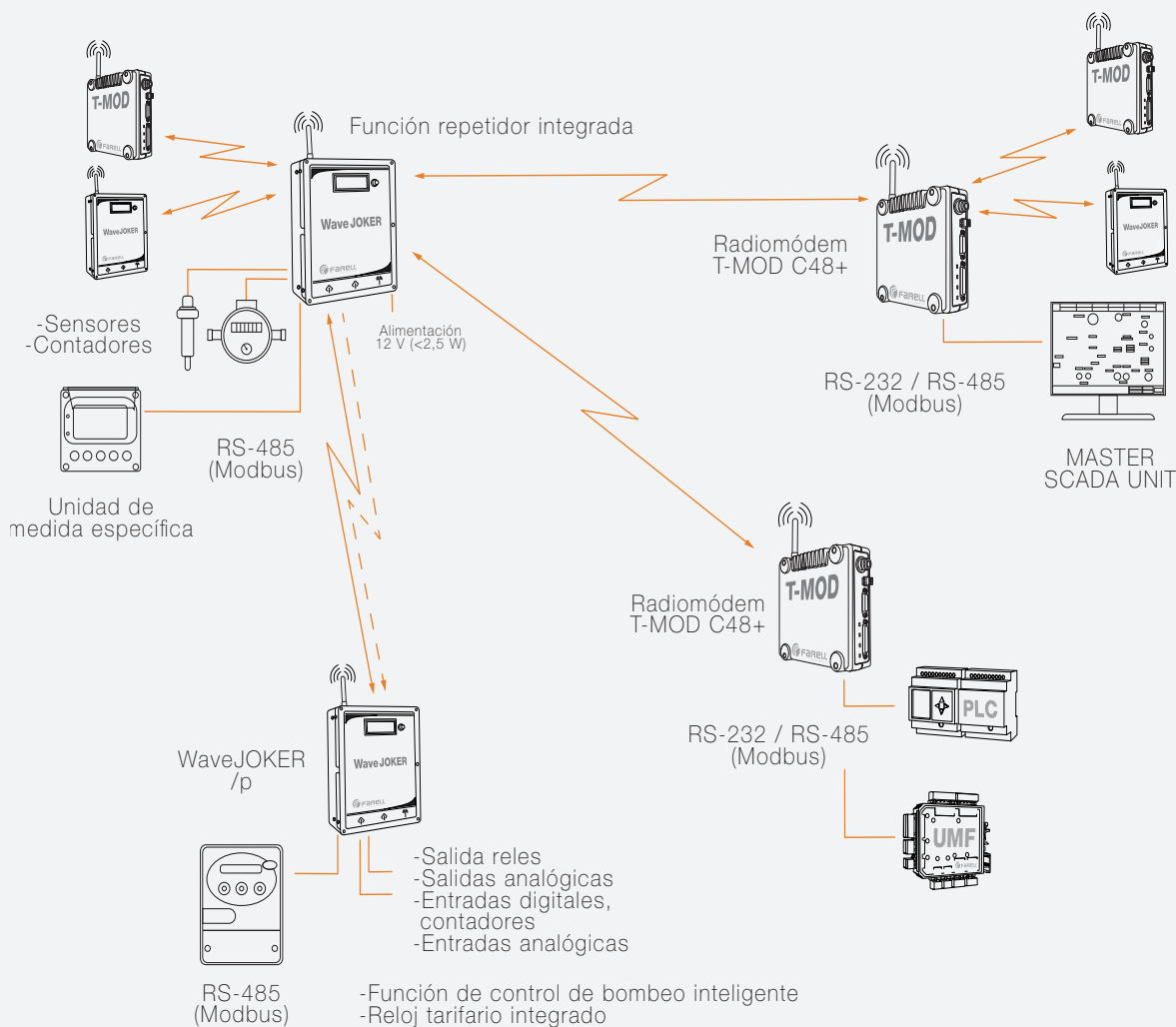
Sensor nivel
(4-20 mA)
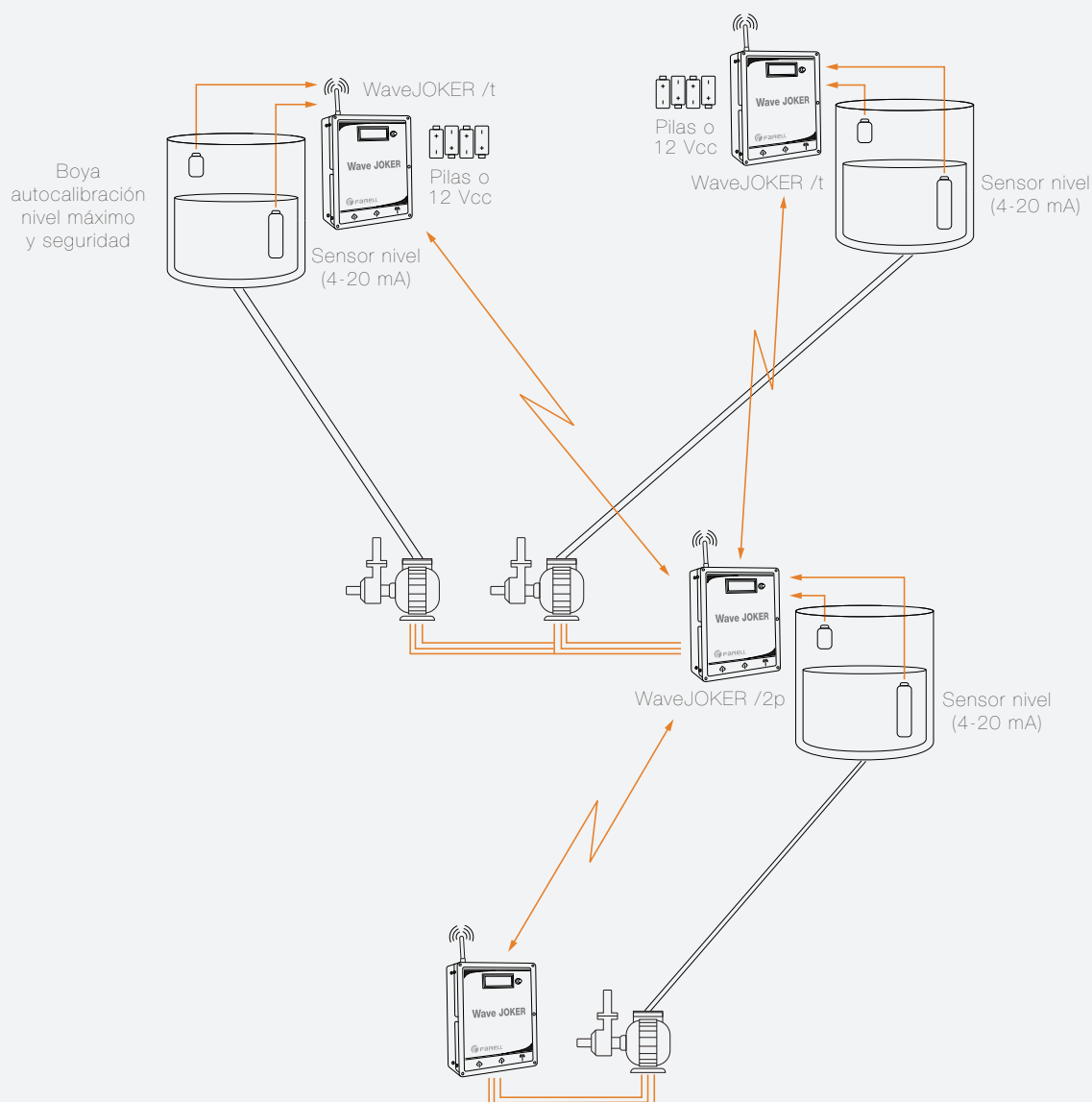
CENTRALIZED OPERATION

Each remote network unit (RTU) works in Modbus Slave Mode and is interrogated by a Master unit (SCADA, etc.). In this network can coexist:

• WaveJOKER type RTU units (which can also act as a repeater). The RS-485 port can also be used to communicate with other measurement or control equipment located at the same station, with the control center.

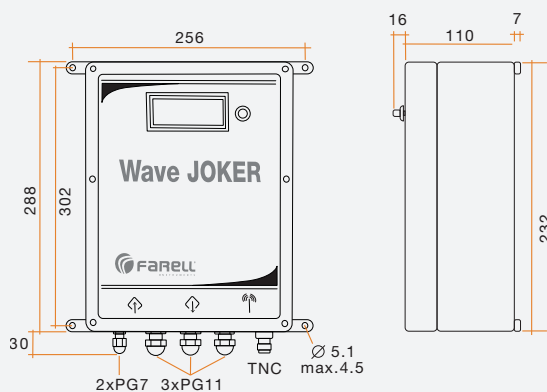• PLC type RTU units, etc., linked via T-MOD C48+ radio modem.

Increased security in centralized operation

A WaveJOKER /t unit can be configured to work in Slave+(Master) Mode. In this case the unit will normally work in Slave Mode while being interrogated periodically. In case of cessation of polling (after a configurable time), it would switch to Master Mode, sending data to an associated remote slave unit (dotted link in the figure).

The unit automatically returns to Slave Mode when polling is restored. This combination of modes is useful to guarantee the operation of vital parts of a telecontrol system in the event of failure of a central component.

T-MOD

Función repetidor integrada

Wave JOKER

-Sensores
-Contadores

Alimentación
12 V (<2,5 W)

RS-485
(Modbus)

Unidad de
medida específica

Radiomódem
T-MOD C48+

RS-232 / RS-485
(Modbus)

MASTER
SCADA UNIT

Radiomódem
T-MOD C48+

RS-232 / RS-485
(Modbus)

PLC

UMF

WaveJOKER
/p

Wave JOKER

-Salida reles
-Salidas analógicas
-Entradas digitales,
 contadores
-Entradas analógicas

RS-485
(Modbus)

-Función de control de bombeo inteligente
-Reloj tarifario integrado

DIMENSIONS (mm)

256

288

302

Wave JOKER

FARELL

30

2xPG7   3xPG11

TNC

$\varnothing$ 5.1
max.4.5

16   110   7

232

WaveJOKER /T - Depósito

	Base	Extension	Maximum
DIGITAL INPUTS (CONTACTS OR PULSES)	6	+8	14
DIGITAL INPUTS (CONTACTS OR PULSES)	2	+2	4
METERS (1T AND Q)	2	+2	4
RADIO REPEATER FUNCTION	-	+1	1
TRANSPARENT RS-485 PORT (RADIOMODEM FUNCTION)	-	+1	1
OLED DISPLAY	Yes	-	-
INTEGRATED LONG RANGE RADIOMODEM 0.5 W	Yes	2W	2W
POWER SUPPLY 12 VDC	Yes	-	-
POWER SUPPLY BY LI BATTERY, AUTONOMY > 3 YEARS (0.5 W) (AUTONOMOUS MODE)	Yes	-	-
LI BATTERY	-	1	1
ENCRYPTION	Yes	-	-
UMF-100 EMULATION	Yes	-	-
MODBUS PROTOCOLO	Yes	-	-
AUTOMATIC PASSAGE FROM CENTER SLAVE TO MASTER IF CENTER FAILURE (DIRECT COMMUNICATION WITH PUMP)	Yes	-	-
FIELD EXPANSIONS	Yes	-	-

WaveJOKER /P (/2P) – Pumping Station

	Base	Extension	Maximum
DIGITAL INPUTS (CONTACTS OR PULSES)	6	+8	22
ANALOGUE 4-20 MA INPUTS (ACTIVE AND PASSIVE)	0	+2	6
RELAY OUTPUTS (SETUP FUNCTION)	5	+5	10
ISOLATED ANALOG OUTPUTS (CONFIG.)	0	+2 (Max. 14 Dig. Inp.)	4
PUMP CONTROL	1 (1+1)	+2 (1+1)	5 (3+3)
METERS (3T AND Q)	2	-	2
METERS (1T AND Q)	0	+2	4
HOUR COUNTER/MANEUVERS (3T)	0	+2	4
HOUR COUNTER/MANEUVERS (3T)	1 (2)	-	1 (2)
WEEKLY RATE CLOCK (3T)	-	+1	1
SEASONAL CLOCK FUNCTION (3T)	-	+1	1
S&F TYPE RADIO REPEATER FUNCTION	-	+1	1
TRANSPARENT RS-485 PORT (RADIOMODEM FUNCTION)	-	+1	1
OLED DISPLAY	Yes	-	-
INTEGRATED LONG RANGE RADIOMODEM 0.5 W	Yes	2 W	2 W
POWER SUPPLY 12 VDC	Yes	-	-
PILA LI (RELOJ/CALENDARIO SI FALLO ALIMENTACIÓN)	0	1	1
ENCRYPTION	Yes	-	-
UMF-100 EMULATION	Yes	-	-
MODBUS PROTOCOLO	Yes	-	-
FIELD EXPANSIONS	Yes	-	-